What is claimed is:

1. A device for converting between electrical energy and mechanical energy, the device comprising at least one electroactive polymer having a first active area, the first active area comprising at least two first active area electrodes and a first portion of the at least one electroactive polymer, the first portion arranged in a manner which causes the first portion to deflect in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the first portion, wherein the device is arranged such that deflection of the first portion in response to a change in electric field and/or deflection of the first portion causing a change in electric field is at least partially assisted by mechanical input energy.

2. The device of claim 1 wherein the mechanical input energy is substantially equal to the elastic energy required to deflect the first portion of the electroactive polymer for a part of the deflection.

3. The device of claim 2 wherein the mechanical input energy is substantially equal to the elastic energy required to deflect the first portion of the electroactive polymer for an entire deflection corresponding to an actuation.

4. The device of claim 1 wherein the mechanical input energy is less than the elastic energy required to deflect the first portion of the electroactive polymer for a part of the deflection.

5. The device of claim 1 wherein the mechanical input energy is input elastic energy obtained from a second portion of the at least one electroactive polymer.

6. The device of claim 5 wherein the second portion is included in a second electroactive polymer.

7. The device of claim 5 wherein the second portion is included in the electroactive polymer having the first portion.

8. The device of claim 5 further comprising a second active area, the second active area comprising at least two second active area electrodes and a third portion of the at least one electroactive polymer, the third portion arranged in a manner which causes the third portion to deflect in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the third portion.

9. The device of claim 8 wherein elastic potential energy stored in the third portion during actuation of the second active area at least partially contributes to the mechanical input energy.

10. The device of claim 8 wherein the first active area and the second active area are arranged such that deflection of the first portion comprises a direction of contraction that is at least partially linearly aligned with a direction of expansion for the third portion.

11. The device of claim 8 wherein the second portion of the at least one electroactive polymer comprises the third portion of the at least one electroactive polymer.

12. The device of claim 8 wherein the at least one electroactive polymer is a monolithic polymer.

13. The device of claim 12 wherein the monolithic polymer has a substantially symmetrical geometry.

14. The device of claim 12 wherein the first active area and the second active area are arranged substantially symmetrically about a central portion of the monolithic polymer.

15. The device of claim 1 wherein the at least one electroactive polymer is arranged such that elastic potential energy of the at least one electroactive polymer is independent of deflection in response to a change in electric field provided by the at least two first active area electrodes and/or deflection which causes a change in electric field.

16. The device of claim 1 wherein the electroactive polymer includes pre-strain.

17. The device of claim 1 wherein the mechanical input energy is provided by an external load coupled to the at least one electroactive polymer.

18. The device of claim 1 wherein the device is included in one of a motor and a generator.

19. A device for converting between electrical energy and mechanical energy, the device comprising at least one electroactive polymer, the at least one electroactive polymer comprising a first active area, the first active area comprising at least two first active area electrodes and a first portion of the at least one electroactive polymer, the first portion arranged in a manner which causes the first portion to deflect in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the first portion, wherein the at least one electroactive polymer is arranged such that elastic potential energy of the device is substantially independent of deflection of the first portion in response to a change in electric field and/or deflection of the first portion causing a change in electric field.

20. The device of claim 19 wherein the at least one electroactive polymer is arranged such that elastic potential energy of the device is substantially constant during deflection of the first portion in response to a change in electric field and/or deflection of the first portion causing a change in electric field.

21. The device of claim 20 further comprising a home position having a lower elastic potential energy than the substantially constant elastic potential energy of the device during deflection of the first portion.

22. The device of claim 19 further comprising a second active area, the second active area comprising at least two second active area electrodes and a second portion of the at least one electroactive polymer, the second portion arranged in a manner which causes the second

portion to deflect in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the second portion.

23. The device of claim 22 wherein the first active area and the second active area are arranged such that deflection of the first portion includes a direction of contraction that is at least partially linearly aligned with a direction of expansion for the second portion.

24. The device of claim 23 wherein the at least one electroactive polymer is a monolithic polymer that comprises both the first portion and the second portion.

25. The device of claim 22 wherein the first portion of the at least one electroactive polymer is included in a first electroactive polymer that is mechanically coupled to a second electroactive polymer that comprises the second portion.

26. The device of claim 19 further comprising a mechanism that assists substantially independent elastic potential energy deflection of the device.

27. The device of claim 26 wherein the mechanism is a motion constraint that constrains the deflection of the device.

28. A method of using at least one electroactive polymer, the at least one electroactive polymer comprising a first active area, the first active area comprising at least two first active area electrodes and a first portion of the at least one electroactive polymer, the method comprising deflecting the first portion such that elastic potential energy of the at least one electroactive polymer is substantially constant for the deflection.

29. The method of claim 28 wherein the deflection is in response to a change in electric field provided by the at least two first active area electrodes.

30. The method of claim 28 further comprising deflecting a second portion of the at least one electroactive polymer, the second portion included in a second active area having at least two second active area electrodes.

31. The method of claim 30 wherein deflecting of the second portion is at least partially assisted by elastic energy stored in the first portion.

32. The method of claim 30 wherein application of a voltage difference to the at least two second active area electrodes begins after application of a voltage difference to the at least two first active area electrodes ends.

33. The method of claim 30 wherein application of a voltage difference to the at least two second active area electrodes begins while the first portion of the at least one electroactive polymer is contracting.

34. The method of claim 33 wherein application of a voltage difference to the at least two second active area electrodes begins during the peak elastic contraction of the first portion of the at least one electroactive polymer.

35. The method of claim 30 wherein actuating the second active area includes a direction of expansion that is at least partially linearly aligned with a direction of contraction of the first active area after actuation.

36. The method of claim 30 wherein the first portion and second portion are deflected to move a third portion of the at least one electroactive polymer along a path.

37. The method of claim 28 wherein the first portion is deflected in resonant mode.